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SOUND AND SPELLING IN ENGLISH

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THE RELATION OF SPELLING TO SOUND

In recent years, there has been extensive discussion of the teaching of reading in our American schools. The prevalent method of teaching beginning reading in the first and second grades, by the so-called "see-and-say" method, has been condemned as wasteful and harmful, especially by Rudolf Flesch in his *Why Johnny Can't Read* (1955). His proposal, to use what he termed "systematic phonics," was in its turn attacked as reactionary and out of touch with progressive concepts of education, and even as anti-democratic. The problem of teaching our children to read both rapidly and with understanding is crucial; yet the furore of the debate in the late nineteen-fifties died down without any definitive solution being reached. Parents and teachers have been understandably confused by this bitter debate and its inconclusive outcome. This confusion is bound to remain until parents, teachers and the general public are in possession of adequate information on the essential nature of the basic problems involved in the teaching of reading, especially on the structure of our English spelling system and its relation to the sounds of the English language. Without an understanding of the relation between writing and speech, in general and as applied to English, we can never solve the problem of teaching our children to read accurately and

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effectively. To provide this information is the aim of this booklet.

In considering any problem, we cannot begin the real discussion before we are sure that possible sources of misunderstanding are removed at the outset. A misunderstanding exists, and is very widespread indeed in our society, concerning the relative position and importance of writing and speech. Many, perhaps most, people think that what is written is more important than what is spoken: that writing comes first, and speech second, in both intellectual and everyday matters. We often tend to think of speech as a mere "corruption" of what is written; at its worst, this misconception extends so far as to blind people to the existence of speech, as separate from writing. A certain literary critic once wrote concerning his six-year-old boy who was about to enter first grade, "Tomorrow Roderick goes to school, and he will now for the first time come in contact with words!" (Had Roderick been using nothing but sign-language for the first six years of his life?) What the critic meant, of course, was that Roderick had been communicating up to then only by means of spoken words, and that he would now be introduced to their written representation. But the critic's misunderstanding was so great that he produced a masterpiece of nonsensical confusion.

It may take a drastic wrench in our habitual thinking to conceive of speech as taking precedence over writing in human affairs, but we must do so if we are to understand the actual relation between the two. Writing is simply a way of representing speech, and our conventional systems of orthography are always incomplete and inaccurate in their representation of language as it is spoken. That this is so, can be shown on every count: historical origin, everyday function, and present-day importance. Speech has been in

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existence ever since man began to be man—a time usually set at somewhere between five hundred thousand and two million years—but writing came into existence only a scant five or six thousand years ago, since the beginnings of hieroglyphic writing in Egypt and of cuneiform writing in Sumeria. Even nowadays, with literacy so widespread, probably not more than half of the whole human race has even a nodding acquaintance with any system of writing (think of all the illiterate millions, even billions, of people in Asia, Africa and South America); yet an illiterate person is none the less human because he is illiterate. In our everyday existence, we—yes, even we of highly complex American and European societies—speak far more than we write. (Remember, too, that psychologists have shown that every time anyone writes or reads something, an act of “inner speech” takes place but is inhibited on the level of muscular performance.) The practical conclusion to be drawn from these considerations is that letters represent sounds, not the other way around, and we must base all our thinking on this fundamental fact.

The consequence of this primacy of speech over writing is that we must not only analyze the situation, but also formulate relationships and base our strategy (in this case, of course, teaching procedure) in terms of speech first and writing second. We cannot begin our analysis by taking up letters and the way they are “pronounced”; we must first know what are the sounds of English and then must see how (and to what extent) they are represented in spelling. When we know the relationships of letters to sounds, we can then see whether there are degrees of complication in these relationships—in other words, whether some English spellings are more straightforward and systematic than others. If such degrees of complication exist in the way words are written,

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we must classify them and take them into account when planning the order in which we teach our children to read and spell words.

In order to analyze or discuss any set of phenomena, we must have clear-cut and well-defined units of analysis in terms of which our discussions can be phrased. In chemistry, these units are molecules and atoms; in nuclear physics they are electrons, protons, etc.; and no-one would think nowadays of trying to discuss chemistry or physics without these basic terms. The same situation prevails with regard to phenomena of language. For our purposes here, the everyday words "sounds" and "letters" will not be wholly satisfactory, since they do not cover all the cases we may wish to take up (e.g. that of Chinese characters, which are not letters but which are graphemes). In talking about the English spelling system, we need only three technical terms, which are here defined and exemplified:

1. **PHONEME**: a significant unit of speech-sound. We use the term *speech-sound* in our definition, to eliminate grunts, clearings of the throat, screams, and all other possible sounds which do not function as part of the system of human speech. The term *significant* means "making a difference in meaning": thus, in English speech, the difference between *t* and *d* is significant, because there is a difference in meaning between, say, *tot* and *dot*; and the difference between the first sound of *thin* and the first sound of *din* is likewise significant, for the same reason. We therefore say that such a significant difference is *phonemic*, and a unit of speech-sound which has phonemic significance is a *phoneme*. In any given language, phonemes can be simple or compound (as in the case of diphthongs, which are combinations of vowels and semi-vowels).

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2. GRAPHEME: a significant unit of visual shape. We use the expression *visual shape* so as to cover, not only writing, but also all other kinds of shape perceived by the eye, e.g. carving, letters and other forms spelled out by bands on football fields, by floral designs, etc. The grapheme, as a unit, is to visual shape what the phoneme is to speech-sound. Thus, in English spelling, our basic graphemic units are the twenty-six letters of the Roman alphabet; but in other systems of writing, certain differences which we regard as non-significant have graphemic significance, and some which we consider significant have none. For instance, if one of us writes the small letter *i* without a dot over it, this, in English spelling, is just a childish mistake; but in modern Turkish orthography, *i* stands for one phoneme and *ı* for another, and the two letters are distinct graphemes in Turkish and must not be confused. Like phonemes, graphemes also can be either simple or compound: instances of the latter are English *th* or *ng*, which are combinations of two single graphemes but which in themselves function as one. (Traditional terminology recognizes this fact by using such expressions as *digraph* for combinations of two letters, etc.)

3. MORPHEME: a significant unit of grammatical form. Any simple word in English is a morpheme; prefixes (like *de-* in *debase* or *ex-* in *extend*) and suffixes (like *-ing* in *ringing* or *-ment* in *debasement*) are also morphemes. A morpheme consists of one or more phonemes; phonemes in themselves are meaningless, and are only the building-blocks out of which meaningful sequences of phonemes (i.e. morphemes and their combinations) are built.

As can easily be seen from these three terms, the suffix *-eme* means "significant unit of . . .," and is added to elements like *phon-* "sound," *graph-* "writing," or *morph-*

"form." There are a great many other terms ending in *-eme* in use in present-day linguistic analysis, such as *sememe* "significant unit of meaning," etc., but these need not concern us here.

Morphemes often occur independently of other morphemes, as, for example, when we have a single word used alone as a sentence (*Where? Here. Fire! Run!*). Graphemes can also occur alone, as when we list the letters of the alphabet (*a, b, c . . .*) or when they are used as abbreviations (*Mr. K.*). Phonemes, however, almost never occur alone in normal usage; they occur as part of the stream of speech. One normally does not pronounce the sound of, say, "p" or "t" or "j" in isolation. It is important to keep this fact in mind when evaluating methods of teaching reading which call on learners to "sound out" the separate letters of a word's spelling.

A system of graphemes may stand in various types of relationship to the linguistic system which it represents. In some instances, graphemes represent morphemes (for the most part, but not always, what would usually be called "words"), as in the case of ancient Egyptian hieroglyphs and of Chinese characters. (There is a widespread, but false, notion that Chinese characters stand for "ideas"; they actually represent morphemic units of the Chinese language.) More often, though, graphemes represent one or another aspect of the phonemic system of a language. A set of graphemes which stands in a more or less one-to-one relation with the phonemes of a language is an *alphabet*, and any such set may be said to be more or less alphabetical, depending on the closeness of the fit between its graphemes and the phonemes they represent. In this connection, by the way, we avoid using the term *phonetic* to describe the way a language is written, because *phonetic*, in linguistic analysis,

refers to the raw material of speech-sound. All languages, because they are spoken, are by definition phonetic, and it is nonsensical to say, for example, that "Italian is a more phonetic language than English," when what we really mean is that the spelling system of Italian is more nearly alphabetic than that of English.

Does an alphabetic system of writing ever give a complete representation of the phonemic system it represents? Here we must distinguish carefully between two types of alphabet: 1) a complete *phonemic transcription*, specifically designed by trained linguistic analysts, to represent every feature of a language's phonemics; and 2) a *conventional orthography*, not usually designed by trained analysts and used by some or all of the native speakers of a language in writing it. No conventional orthography ever reflects its language completely: there are always features of sentence-melody, stress and juncture (the way in which phonemes are joined in the stream of speech) that are notated imperfectly or completely neglected in writing. Most orthographies afford representation only to the vowel and consonant phonemes and to some (not all) features of intonation (sentence-melody). Even in their representation of vowel and consonant phonemes, almost all orthographies are inconsistent, be it only in one slight respect or another. For example, Italian spelling normally uses *qu* before a vowel as we do in English, e.g. in *quarto* "fourth," *quinto* "fifth"; but in a few words *cu* is used instead, as in *cuoco* "cook" or *scuola* "school," and Italians make fun of poor spellers who write *quoco* for *cuoco* or *squola* for *scuola*.

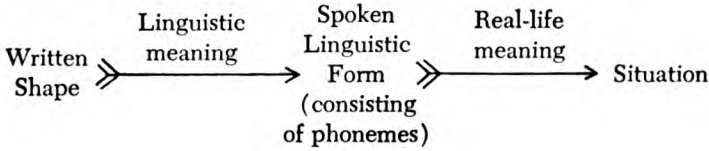
When there are inconsistencies in the way an alphabetic orthography represents a phonemic system, these inconsistencies can be used in spelling to symbolize differences between morphemes, especially those morphemes which sound

alike but have different meanings (homonyms). Italian has two ways of spelling the sequence of phonemes which sounds like "cheh": *ce* and *cie*. There are also two Italian words which sound like "cheh-co," the one meaning "Czech" and the other "blind." Italian conventional spelling utilizes the loose correspondence between grapheme and phoneme here to differentiate between the homonyms *ceco* "Czech" and *cieco* "blind." English spelling has a great many such inconsistencies, as when we represent the sound "ee" by 1) *ee*, 2) *ea*, and 3) *e* + consonant letter + *e*. These three spellings are used to differentiate, for instance, the three morphemes *meet* ("encounter"), *meat* ("edible flesh") and *mete* ("hand out"). Even though there are many such instances of morphemic differentiation by means of variant spellings in English orthography, though, this does not mean that the graphic system of English is essentially morphemic, as is that of Chinese. Our English orthography is basically alphabetic (though with a fair number of irregularities); any attempt to teach the reading and writing of English must take this fundamental fact into account from the very start.

We must also remember, throughout our discussion, that any grapheme or sequence of graphemes used in spelling a word always symbolizes ("means") some fact of language, be it a phoneme (as in alphabetic writing) or a morpheme (as in Chinese characters). In any utterance, meaning is conveyed by morphemes and their combinations into phrases and clauses; by the term *meaning*, we here refer to the way in which these linguistic features symbolize the facts of the universe in which we live. Note especially that the SPELLING of any word has no "meaning," i.e. symbolizes nothing, directly, except the linguistic characteristics of the morpheme it represents (in an alphabetic orthography, its

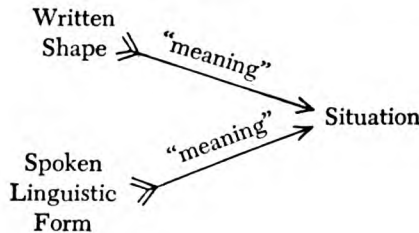
phonemic structure); this kind of meaning may be termed *linguistic* meaning, as opposed to *real-life* meaning. This latter is conveyed, not by written (graphemic) shapes, but by spoken morphemes and only by spoken morphemes. In diagrammatic form, the relationship between written shape, spoken linguistic form, and real-life situation may best be symbolized as shown in Figure 1.

FIGURE 1



Many naïve persons tend to think that, instead of being as shown in Figure 1, the relationship between written shape and spoken linguistic form is one of equality and independence, each referring directly in its own way to the real-life situation, and that the same kind of "meaning" is involved in each case, as shown in Figure 2.

FIGURE 2



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As we have seen, however, nothing could be more inaccurate than the concept of the relationship that is shown in Figure 2, and any attempt to teach reading by trying to correlate written words directly with real-life meanings ("reading for meaning"), without going through the spoken linguistic forms which the written shapes symbolize, is fundamentally erroneous and is foredoomed to failure.

Often the "reading for meaning" method is opposed to something called the "phonic" method, in which children are taught to associate separate letters with individual sounds "sounded out" singly when words are read. As we have seen, however, phonemes do not occur in isolation, and it is unnatural to expect a learner to pronounce separate sounds out of their normal context in the stream of speech. Some "phonic" methods even go so far as to assume that the normal six-year-old does not know the phonemes of the language he has been speaking as his mother tongue, and hence attempt to teach them to him; usually, the designers of such methods have a rather inadequate conception of the actual formation of speech-sounds to begin with. So-called "phonic" methods of teaching reading are not much better than the other extreme of "see-and-say" or "reading for meaning" methods which neglect the basic alphabetic function of our orthography. In rather looser usage, any method which correlates letters and sounds, especially in groups of rhyming words (e.g. *had*, *cad*, *fad*, *sad*) is termed "phonic"; but the use of rhyme-groups is not the essence of the "phonic method." As a matter of fact, the term *phonic* has become so confused in its meaning and so associated with a certain type of inadequate, half-baked approach to the situation, without the benefit of modern understanding of linguistic structure, that we will do best to avoid this term altogether. Anyone who speaks of "phonics" or a "phonic"

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method of teaching reading, reveals himself to be on the same level of understanding as a person who calls Italian a "phonetic" language or English an "unphonetic" language.

In this discussion, we have tried to clear the terrain of misunderstanding, so as to proceed to our basic task, that of presenting first the phonemes of the English language (Chapter 2), then the graphemes of English orthography (Chapter 3). After these expositions, we shall take up the relation between grapheme and phoneme in English (Chapter 4) and the gradations of difficulty in our spelling system (Chapter 5); our concluding chapter (6) will treat of the application of graphemic and phonemic analysis to the construction of elementary reading texts and of spellers.

BIBLIOGRAPHY

- Bloomfield, Leonard: "Linguistics and Reading," *Elementary English Review* 19.125-130, 183-186 (1942); reprinted in *Language Learning* 5.94-107 (1955) and in Bloomfield and Barnhart, *Let's Read*, pp. 19-42.
- Bloomfield, L., and C. L. Barnhart: *Let's Read, a Linguistic Approach* (Detroit, Wayne University Press, 1961).
- Carroll, John B.: *The Study of Language* (Cambridge, Harvard University Press, 1953), Chapter 6 ("Language and Education"), especially pp. 146-150.
- Fries, C. C.: *Linguistics and Reading* (New York, Holt, Rinehart and Winston, 1963).
- Hall, Robert A., Jr.: *Introductory Linguistics* (Philadelphia, Chilton Books, 1964), especially Chapters 44 ("Graphemics"), 45 ("Sound and Spelling"), 73 ("Reading") and 74 ("Spelling").
- Hall, Robert A., Jr.: *Linguistics and Your Language* (New York, Doubleday Anchor Books no. A-201, 1960), Chapters 3 ("Marks You Make With Your Fist") and 11 ("Learning Your Own Language").

THE RELATION OF SPELLING TO SOUND

Lefevre, Carl A.: *Linguistics and the Teaching of Reading* (New York, McGraw-Hill, 1964).

Smith, Henry Lee, Jr.: *Linguistics and the Teaching of English* (Cambridge, Harvard University Press, 1956).

Smith, Henry Lee, Jr.: Review of Bloomfield and Barnhart, *Let's Read*, in *Language* 39.67-78 (1963).

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In determining what are the phonemes of a given language, we do not start from the letters with which that language is written. On the contrary, we try to put spelling out of our minds as far as possible, and to listen to the sounds of speech as they strike our ears. At first, if we are accustomed to thinking solely in terms of letters, we may feel wholly lost and unable to make anything out of this babel or even to make a beginning at classifying the sounds that strike our ears. Yet they can be classified, according to any one of several methods of analysis. The method that is most widely used, and that we shall follow here, is that of describing the parts of the organs of speech which are used in making the sounds. There is a whole literature built up around the analysis of sounds viewed purely as the raw material of speech (phonetics) and also as functional units of speech-sound (phonemics). Here we shall use only the fewest technical concepts necessary for us to establish the phonemes of English.

We start with the observation that sounds fall into two major types: those in which the stream of air coming from the lungs passes through the mouth and nose and no audible friction, and those in which audible friction is produced. The first category, those produced without audible friction,

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are called *vowel sounds*; the second, *consonant sounds*. Notice very carefully that we are here talking about sounds, not letters. By “vowels,” we do NOT mean “*a, e, i, o, u* and sometimes *w* and *y*”; we mean a certain type of sound, as just defined, and the same holds true of the terms “semi-vowel” and “consonant” henceforth. If we want to talk about the letters “*a, e, i, o, u* and sometimes *w* and *y*,” we shall always qualify our references by specifying that we are discussing *vowel letters* and similarly for *consonant letters*.

Vowel sounds may further be classified according to the position in which the tongue is held in the mouth during their pronunciation: is it raised towards the roof, is it down in the bottom of the mouth, or is it midway between the two positions? According to the height at which the tongue is held, we shall classify a vowel sound as *high*, *mid*, or *low*. Furthermore, is the tongue in the front of the mouth, in the back, or in a central position? According to its position in this dimension, we classify a vowel sound as *front*, *central*, or *back*. In some vowel sounds it makes a difference whether the tongue muscle is tense (as in the vowel sound of *beat*) or lax (as in the vowel sound of *bit*); normally this tenseness is accompanied by a gliding movement of the tongue upward, in English vowels, whereas the lax vowels do not have such an upward tongue-glide. There is a further feature which determines the quality of vowel sounds: whether the lips are rounded or not, but in English the lips are automatically rounded for back vowels (“*aw*,” “*oh*” and “*oo*”) and not rounded for others, so we need not make a special category for this difference.

Now let us examine the vowels of American English and see how many vowel phonemes there are and of what kind. We see that there are eleven of them, which we shall list with examples given in conventional spelling, and also the

way the phonemes are transcribed in the two most widely used systems of phonemic transcription, in Table I. In ad-

TABLE I

Vowel Phonemes of American English

The vowel sound of:	Phonetic Description	IPA-Kenyon- Pike	Trager-Smith
<i>beat</i> or <i>beet</i>	high-front-tense	/i/	/iy/
<i>bit</i>	high-front-lax	/ɪ/	/i/
<i>bait</i> or <i>bate</i>	mid-front-tense	/e/	/ey/
<i>bet</i>	mid-front-lax	/ɛ/	/e/
<i>bat</i>	low-front-lax	/æ/	/æ/
<i>hot</i>	low-central-lax	/a/	/a/
<i>but</i>	mid-central-lax	/ə/	/ə/
<i>bought</i>	mid-back-lax	/ɔ/	/o/
<i>boat</i>	mid-back-tense	/o/	/ow/
<i>book</i>	high-back-lax	/ʊ/	/u/
<i>boot</i>	high-back-tense	/u/	/uw/

dition to the eleven shown there, there is another which is less frequent in its occurrence, and which many (perhaps most) Americans do not have as a separate phoneme at all. Some speakers have it in the adverb *just* ("just a few") as opposed to the adjective *just* meaning "righteous." This twelfth vowel is a high-central-lax vowel, which in phonemic transcription is usually written with a letter *i* with a bar through the middle, called "barred *i*": /ɨ/.

You will notice that we have given two different phonemic transcriptions in Table I. The column on the left is labeled "IPA-Kenyon-Pike," because it is based on the International Phonetic Alphabet (the "IPA") as adapted to American English by John S. Kenyon and Kenneth L. Pike. That on

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the right is headed "Trager-Smith," with the names of two scholars (George L. Trager and Henry Lee Smith Jr.) who developed it, on a somewhat different basis from that of the IPA. Neither of these two transcriptions has, as yet, been completely accepted throughout the field of linguistic analysis, any more than any single type of gearshift has become universal on automobiles. From one point of view, we may regret that there is not a single universally accepted phonemic transcription, as there is a single set of chemical symbols (e.g. Na for "sodium", Fe for "iron" etc.). On the other hand, we need not regret this state of affairs too much, since it shows that linguistics is a live field of study and is still developing. In any case, the disagreement among scholars is not so much over the facts themselves as over their relative importance and the most effective way of symbolizing them; everyone agrees that the vowel phonemes of English are those we have given in Table I, and that these are the ones we must take into account in studying their graphemic representation.

You will also see that in each of the columns of phonemic transcription, the phonemic symbols are enclosed in slant lines: / /. This is a convenient way of telling the reader: "The letter or letters between these slant lines is a phonemic symbol, and is always to be interpreted as referring to the same phoneme, within the conventions of whatever system of transcription we are now using." The slant lines also tell us: "Pronounce whatever is written between the slant lines as units of sound, not using the names of the letters with which it is written."

There are, in addition to the vowel phonemes, two further phonemes which are like the vowels in the positions in which they are pronounced, but which are like consonants in that they are pronounced with audible friction. These are the

two glides written both in conventional spelling and in phonemic transcription as *y* (a glide upward and forward, as in *yet*) and *w* (a glide upward and backward, as in *went*). In some people's speech there exists a third semi-vowel, a glide toward the central position, which the followers of IPA-Kenyon-Pike tend to consider as not having phonemic significance, but which Trager and Smith treat as phonemic and symbolize with the letter /h/, as when they transcribe *man* as /mæhn/ rather than /mæn/.

With the use of semi-vowel phonemes before vowels we normally have little difficulty, since conventional orthography and phonemic transcriptions both symbolize them in the same way: *yet*, *wit*. However, there are a number of combinations of vowel phonemes followed by semi-vowels, which are called *diphthongs*. At first, many people have a hard time recognizing some phonemic diphthongs as such, because English spelling often writes them with single vowel letters. Take, for instance, the phonemic structure of the word *bite*. We all know that the final letter *e* is "silent" here, and that this word begins and ends with a consonant in pronunciation. However, what about the part that comes between the two consonants? Does it consist of a single phoneme or of more than one? Some of us may be tempted to answer "one phoneme, a vowel," because it is written with the letter *i*; but if we look into the matter more carefully, we see that such an answer would be wrong. Try to pronounce *bite* by beginning with the phoneme /b/ and then a single vowel sound, holding that vowel sound and not moving the tongue into any kind of an upward glide. What do we get?—something that starts off /ba . . . a . . . a . . . a/ and gets no further. To get the rest of the word out, we have to move our tongue upward and forward in a /y/-glide. In other words, in *bite* what we have between the two consonants is

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not a single vowel phoneme, but a sequence of vowel + semi-vowel phonemes, i.e. a diphthong. There are several diphthongs which all schools of analysis recognize as existing in American English, as shown in Table II.

TABLE II

Diphthongs of American English

The diphthong of:	IPA-Kenyon-Pike	Trager-Smith
<i>bite, height</i> etc.	/ay/	/ay/
<i>cow, loud</i>	/aw/	/aw/
<i>boy</i>	/ɔy/	/oy/

In addition, as you can see from Table I earlier in this chapter, Trager and Smith interpret as diphthongs the tense vowels which IPA-Kenyon-Pike consider single vowel units. In some parts of North America, the diphthongs given in Table II may have somewhat different vowel sounds from those we have indicated; for example, in some regions of the South, the words *cow* and *loud* have /æ/ (the vowel of "hat") instead of /a/ before /w/: /kæw/, /læwd/, whereas in most of Canada these words have /əw/, and the /ə/ vowel of "but": /kəw/, /ləwd/. These differences in the structure of diphthongs, however, are not important for their representation in our spelling.

Consonant phonemes, as we saw, involve audible friction. This friction is produced by obstructing the breath-stream at various points along its way out from the lungs through the windpipe and the mouth. We can classify consonants in terms of the characteristics of the obstruction: where is it formed in the mouth? How is it formed? during the pronunciation of the consonant, are the vocal chords vibrating

or not? In accordance with these ways of producing the obstruction, we can establish classifications for consonants. A consonant may be produced with the lips (a *labial* consonant); with the upper teeth and the lower lips (*labiodental*); with the tip of the tongue against the inside of the upper front teeth (*dental*) or the gum-ridge (*alveolar*); or with the top of the tongue raised against the front or the back of the palate (*palatal* and *velar*, respectively). It may be produced with the breath either completely stopped off or being forced past an obstruction. In case there is an obstruction, it is normally formed by the lips and teeth, or else by the tongue inside the mouth; the breath may be forced evenly over the entire area of the obstruction (*fricative*); down a depression in the center of the tongue (a hissing or *sibilant* sound); over one or both sides of the tongue (*lateral*). The top of the tongue may be curled over or the tongue bunched up in the back of the mouth (*retroflex*). A sound produced with the nose used as a resonance chamber is *nasal*. If the vocal chords are vibrating during its production, a consonant is called *voiced*; if not, it is *voiceless*.

With these distinctions in mind, we may list the English consonant phonemes in Table III, as we did for the vowels in Table I. In addition to these twenty-one consonants, there is another which consists simply of a puff of breath or aspiration before a vowel sound, and is therefore called an *aspirate*: *h*, as in *hit*, *home*, etc., written with the letter /h/ in transcription.

In Table III, we have given only one column for phonemic transcription, since IPA-Kenyon-Pike and Trager-Smith agree fairly closely in their way of transcribing consonants. The original IPA used /ʃ/ and /ʒ/ where both Pike and Trager-Smith use /š/ and /ž/, and IPA used /tʃ/ and /dʒ/ for later analysts' /č/ and /g/. These, however, are minor

TABLE III

Consonant Phonemes of American English

Initial consonant of:	Technical Description	Phonemic Transcription
<i>pin</i>	voiceless bilabial stop	/p/
<i>tin</i>	voiceless alveolar stop	/t/
<i>kin</i>	voiceless velar stop	/k/
<i>bin</i>	voiced bilabial stop	/b/
<i>din</i>	voiced alveolar stop	/d/
<i>get</i>	voiced velar stop	/g/
<i>fin</i>	voiceless labio-dental fricative	/f/
<i>thin</i>	voiceless dental fricative	/θ/
<i>vim</i>	voiced labio-dental fricative	/v/
<i>this</i>	voiced dental fricative	/ð/
<i>sin</i>	voiceless dental sibilant	/s/
<i>shin</i>	voiceless palatal sibilant	/ʃ/ or /s/
<i>zip</i>	voiced dental sibilant	/z/
the consonant sound repre- sented by <i>z</i> in <i>azure</i>	voiced palatal sibilant	/ʒ/ or /ʒ/
<i>chin</i>		
<i>gin</i>	voiced palatal stop with sibilant release	/ʒ/ or /tʃ/
<i>mint</i>	voiced labial nasal	/m/
<i>name</i>	voiced alveolar nasal	/n/
the final sound of <i>sing</i>	voiced velar nasal	/ŋ/
<i>limb</i>		
<i>rim</i>		
	voiced dental or alveolar lateral	/l/
	voiced retroflex	/ɾ/

differences, and it is of course a matter of complete indifference which phonemic symbol is used, provided it is clearly defined and used consistently.

As with the diphthongs, you will notice that our traditional spelling is likely to mislead us concerning the nature of certain consonant phonemes. The two phonemes which we write with *th* are both single sounds, not combinations of consonant sounds. Likewise, the consonant which ends such words as *sing*, *gong*, *bang* etc., is a single phoneme, even though we write it as *ng* (and even though some ignorant people talk about “dropping one’s *g*’s” when one says *singin’* instead of *singing*, whereas one is actually substituting an alveolar nasal for a velar nasal).

The vowel, semi-vowel and consonant phonemes we have been discussing are often referred to as *segmental* phonemes, since they seem to come one after the other and form, as it were, segments of the stream of speech. In addition to these, there are other kinds of phonemic features, which occur together with sequences of these segmental phonemes; under this heading we include features of stress, intonation and juncture. Since they seem to be over and above the segmental phonemes, they are often called *supra-segmental* phonemes; some analysts like to call them *prosodic* features.

Under the heading of stress, we must distinguish at least three levels in English; some analysts (e.g. Trager and Smith) insist that there is also a fourth level, but everyone agrees that we must allow for at least three in discussing the structure of single words. Every normal simple word of more than one syllable has a syllable which is more heavily stressed than the others; we say that such a syllable has *full* stress, and that the other syllables have *weak* stress.

In phonemic transcription, the acute accent (‘) is normally used to represent full stress, being written over the

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symbol standing for the vowel phoneme; weak stress is left unmarked. Examples: *hitting* /hítɪŋ/ (here and henceforth, we use a modified Trager-Smith type of transcription for our examples); *menagerie* /menæǵəriy/; *Bostonian* /bostówniyən/; *syllable* /siləbəl/; *behold* /biyhówld/; etc. Furthermore, in compound words, there is an *intermediate* level of stress, which takes the place of full stress in one or more of the words which make up the compound. This intermediate stress is normally marked in phonemic transcription with a grave accent (`): *hat-maker* /hæt + mèykər/; *boiler-factory* /bóylər + fæktəriy/; *sand-paper* /sænd + pèypər/; etc. Intermediate stress also occurs in certain types of words which are not compounds, such as *telephone* /téləfòwn/; *elevate* /éləvèyt/; *elevation* /éləvéyšən/.

Phonemes follow each other in the stream of speech and are joined (or separated) in various ways; to refer to the way phonemes are joined, we use the term *junction*. Normally, they simply follow and merge one into the other without any marked separation; this is termed *close* juncture. On the other hand, there may be a separation between two phonemes, even in the interior of a word, marked in any one of various ways of pronouncing the sounds involved: this is called *open* juncture or *disjuncture*. Close juncture is normally not marked in transcription; open juncture is indicated by a small plus-sign /+/ written between the symbols for the phonemes thus separated. The difference may be heard in such a pair as *nitrate* /náytrèyt/ as opposed to *night-rate* /náyt + rèyt/; we can add a third member to this set of contrasting forms if we invent a compound word to refer to some trait of a Mr. Nye, a *Nye-trait* /náy + trèyt/.

The intonation patterns of English are very complicated, but we can at least say that virtually all scholars analyze

English sentence-melody in terms of sequences of relative pitch, the voice rising or falling from one level to another. There are at least four (some would say five or even six) levels of pitch in English. These are usually numbered from bottom to top, the number 1 standing for a relatively low pitch, 2 for a middle level, 3 for one fairly high, and 4 for a very high pitch. There are a number of different combinations of these which tell the hearer that the speaker has one attitude or another towards what he or she is saying. Thus, for example, a sequence of 2-3-1 tells the hearer "This is a statement, and at the end I have finished this sentence"; 2-3-2, "This is a statement, but I'm not through yet"; 2-2-3, "This is a question," etc.

At a number of points in this discussion, we have mentioned syllables, but have not defined them in phonemic terms. This has been a deliberate omission, because it is difficult to say exactly what an English syllable is, especially with regard to its boundaries. Everyone agrees that there are such things as syllables in English speech, and that every vowel phoneme is the center (or "nucleus") of a syllable. In phonetic terms, several different kinds of definition have been proposed for the syllable: that sequence of phonemes pronounced with a single pulse of breath from the chest; that stretch in the stream of speech which is between two low points of sonority; etc. For our purposes, it is perhaps more important to notice that, in English speech, there is no clear boundary between one syllable and the next, as there is in, say, Italian or Spanish. Especially with a single consonant phoneme between two vowels, it is not possible to say to which syllable the consonant belongs: in a word like *demon* /dīymən/, the lowest point of sonority between the two syllables comes smack in the middle of the consonant

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phoneme /m/, and we cannot say that the /m/ belongs more with the preceding syllable than it does with the one following.

In this chapter, we have given only a very brief summary of the essential features of English segmental and suprasegmental phonemes, in the most elementary terms possible. (If you have found our discussion more complicated than what you are accustomed to in talking about language, it is, not because we have made it so on purpose, but because one cannot treat so truly involved a subject in any simpler terms without leaving out something essential.) Much more detailed expositions can be found in the material cited in the Bibliography for this chapter, which has been subdivided according to the school of analysis represented.

BIBLIOGRAPHY

Works following the Trager-Smith approach to English phonemics:

Gleason, H. A.: *An Introduction to Descriptive Linguistics* (New York, Holt, 1955), chapters 2-4, 13, 16.

Hockett, C. F.: *A Course in Modern Linguistics* (New York, Macmillan, 1958), chapters 2-13.

Trager, G. L., and H. L. Smith, Jr.: *Outline of English Structure* (Norman, Okla., Battenburg Press, 1951), chapter 1.

Works following the IPA-Kenyon-Pike approach:

Hall, R. A., Jr.: *Introductory Linguistics*, chapters 9-20.

Hall, R. A., Jr.: *Linguistics and Your Language*, chapter 6.

Kenyon, J. S.: *American Pronunciation* (Ann Arbor, Wahr, 4th ed., 1940 and later editions).

Pike, K. L.: *Phonemics* (Ann Arbor, Univ. of Michigan Press, 1947).

Thomas, C. K.: *An Introduction to the Phonetics of American English* (New York, Ronald Press, 1947).

THE PHONEMES OF ENGLISH

Thomas, C. K.: *Handbook of Speech Improvement* (New York, Ronald Press, 1956).

On Intonation:

Pike, K. L.: *The Intonation of American English*. Ann Arbor, University of Michigan Press, 1946. (University of Michigan Publications in Linguistics, vol. 1.)

THE GRAPHEMES OF ENGLISH

With graphemes, as with phonemes, we must distinguish several different classes. Not only vowel and consonant letters, but also punctuation marks, form part of our graphemic system. We must also differentiate between simple and compound graphemes.

Our traditional grammatical doctrine tells us that the vowel letters are “*a, e, i, o, u*, and sometimes *w* and *y*.” As for the letter *y*, its use to represent a vowel phoneme is fairly frequent, as in *myth* /míθ/ or *myrtle* /mártəl/; but *w* occurs as a vowel letter only in a few Welsh words such as *cwm* /kúwm/ (a “cirque,” or kind of recess in a mountain) or the feminine name *Gwladys* /gúwladis/ (a variant of *Gladys*), and we might just as well forget about this use of the letter *w*. This leaves us with only one letter, *y*, which really has the function of both a vowel and a consonant grapheme. The other nineteen consonant letters need no special comment. The Arabic numerals from 0 to 9 also count as separate simple graphemes, but form a separate non-alphabetic subsystem of their own, whereas the Roman numerals are simply alphabetic graphemes (I, X, V, etc.) used in a special non-alphabetic way.

The difference between small and capital letters, roman and other fonts of type (italic, bold-face, etc.), is not sig-

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nificant in the representation of phonemes. However, it on occasion has other types of linguistic meaning, as when we capitalize the first letter of a spelling to indicate that the word represented is a proper noun or adjective, or when we use italic type to show that a word has extra loud stress. Note also that in English graphemics accent marks are normally not used except in reproduction of a foreign spelling (e.g. *fiancé* or *rôle*); even in such words, naïve spellers often (perhaps usually) omit the accent marks, and write, say, *coupé* as *coupe*, occasionally with resultant effects on the pronunciation of the word (e.g. /kúwp/ instead of /kuwpé/).

The compound graphemes of English include a great many sequences of vowel letters, graphic diphthongs such as *ae*, *ai*, *au*, *ea*, *ei*, *eo* (as in *people* /píypəl/), *eu*, *ie*, *oa*, *oi*, *ou*, *ue*, in addition to double vowel letters like *ee* or *oo*. There are also certain combinations of consonant letters which function as single units and hence must be considered as compound graphemes : e.g. *ch*, *gh*, *ph*, *rh*, *sh*, *th*; *ng*; and again, all the double consonant letters such as *bb*, *dd*, etc. These combinations function as compound graphemes even when some of them (such as *gh*) are almost always “silent,” or others (like *ph*, *rh*) have the same linguistic meaning as do certain simple graphemes (e.g. *ph* and *f* both = /f/; *rh* and *r* both = /r/).

This is the proper place to take care of certain automatic losses or substitutions of graphemes, such as those which take place when suffixes are added to words—for instance, the loss of final “mute *e*” before *-ed*, *-ing* (*hate*, *hated*, *hating*). In a similar way, certain graphemes are automatically replaced in certain positions: for example, *-ay* at the end of a word is always replaced by *-ai-* when it comes to stand before further graphemes (e.g. *gay* + *-ly* becomes

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gaily). Stating such alternations at the outset as over-riding rules has the advantage of saving space in later explanations and of making over-all patterns clearer than they would otherwise be.

We shall have to take punctuation marks into account as graphemes when considering the way in which supra-segmental phonemes are notated in English writing. The punctuation marks include, of course, the comma, period, colon and semi-colon; the exclamation and interrogation marks; the hyphen and various types of dashes; and the quotation marks (single and double) and parentheses and square brackets. There are still further types of marks which function in essentially the same way as do punctuation marks, but only in special kinds of discourse such as chemistry or mathematics, and hence we need not go into them here.

GRAPHEME AND PHONEME IN ENGLISH

Since the function of graphemes, in an alphabetic writing system, is to represent phonemes, we must now examine the way in which our English orthography performs this function. Our first approach will be through a listing of the phonemes, as we established them in Chapter 3, in a modified Trager-Smith transcription (the IPA-Kenyon-Pike transcription, whatever its scientific merits or demerits, is not so easy to write on a typewriter or to set up in print), together with the graphemes used to represent them, and examples of each.

In addition to these correspondences, we must also mention the very widespread situation in which no phoneme is pronounced, but a grapheme is written, the case of the so-called "silent letters." Many letters are written in this way, especially "mute *e*" at the end of words (*judge, sense*), and a number of consonant letters at the beginning of words (*knee, gnat, psychology, pshaw*) and in the middle of words (*debt, paradigm* /pærədīm/, *drachm* /dræm/ etc.). Perhaps some of the phoneme-to-grapheme correspondences listed in Table IV could also be interpreted as containing "silent" letters, e.g. *foetid* = *fetid* plus a "silent" *e*, or *demagogue* = *demagog* plus "silent" *ue* (this is, in fact, the interpretation placed on the spelling *catalogue* by librarians when

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TABLE IV

Graphemic Representation of English Phonemes

Phoneme	Grapheme	Examples
<i>/iy/</i>	<i>ee</i>	<i>meet</i>
	<i>e</i>	<i>be</i>
	<i>e . . . e</i>	<i>mete</i>
	<i>ea</i>	<i>sea</i>
	<i>ae</i>	<i>Caesarian</i>
	<i>eo</i>	<i>people</i>
	<i>oe</i>	<i>amoeba</i>
	<i>ei</i>	<i>receive</i>
	<i>ie</i>	<i>believe</i>
	<i>i</i>	<i>machine</i>
	<i>ey</i>	<i>key</i>
	<i>ay</i>	<i>quay</i>
<i>/i/</i>	<i>i</i>	<i>hit</i>
	<i>ie</i>	<i>sieve</i>
	<i>e</i>	<i>England</i>
	<i>ee</i>	<i>been</i> (in American English)
	<i>o</i>	<i>women</i>
	<i>u</i>	<i>busy</i>
	<i>y</i>	<i>myth</i>
	<i>ui</i>	<i>build</i>
<i>/ey/</i>	<i>ei</i>	<i>veil</i>
	<i>ea</i>	<i>steak</i>
	<i>ey</i>	<i>obey</i>
	<i>a . . . e</i>	<i>gate</i>
	<i>ai</i>	<i>pain</i>
	<i>ao</i>	<i>gaol</i> (British spelling of <i>jail</i>)
	<i>au</i>	<i>gauge</i>
	<i>ay</i>	<i>ay</i>
<i>/e/</i>	<i>e</i>	<i>set</i>
	<i>ea</i>	<i>leather</i>
	<i>ae</i>	<i>aesthetic</i>

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TABLE IV (Continued)

Phoneme	Grapheme	Examples
	<i>ei</i>	<i>heifer</i>
	<i>ie</i>	<i>friend</i>
	<i>eo</i>	<i>leopard</i>
	<i>oe</i>	<i>foetid</i> (alternative for <i>fetid</i>)
	<i>ai</i>	<i>said</i>
	<i>a</i>	<i>any</i>
	<i>u</i>	<i>bury</i>
/æ/	<i>a</i>	<i>hat</i>
	<i>ai</i>	<i>plaid</i>
	<i>ay</i>	<i>prayer</i>
	<i>au</i>	<i>laugh</i>
/ɑ/	<i>a</i>	<i>father</i>
	<i>e</i>	<i>sergeant</i>
	<i>ea</i>	<i>heart</i>
	<i>o</i>	<i>hot</i>
/ə/	<i>u</i>	<i>cup</i>
	<i>o</i>	<i>son</i>
	<i>ou</i>	<i>couple</i>
	<i>oo</i>	<i>flood</i>
	<i>oe</i>	<i>does</i>
	<i>a</i>	<i>along</i>
	<i>ai</i>	<i>mountain</i>
	<i>ia</i>	<i>parliament</i>
	<i>ei</i>	<i>villein</i>
	<i>eo</i>	<i>dungeon</i>
	<i>i</i>	<i>easily</i>
	<i>oi</i>	<i>porpoise</i>
/o/	<i>o</i>	<i>order</i>
	<i>oa</i>	<i>broad</i>
	<i>ou</i>	<i>ought</i>
	<i>a</i>	<i>tall</i>

TABLE IV (Continued)

Phoneme	Grapheme	Examples
	<i>ah</i>	<i>Utah</i>
	<i>al</i>	<i>talk</i>
	<i>au</i>	<i>fault</i>
	<i>aw</i>	<i>raw</i>
/ow/	<i>o . . . e</i>	<i>note</i>
	<i>oa</i>	<i>road</i>
	<i>oe</i>	<i>doe</i>
	<i>oh</i>	<i>oh</i>
	<i>ou</i>	<i>soul</i>
	<i>ow</i>	<i>flow</i>
	<i>eo</i>	<i>yeoman</i>
	<i>au</i>	<i>hautboy</i>
	<i>eau</i>	<i>beau</i>
	<i>ew</i>	<i>sew</i>
/u/	<i>u</i>	<i>put</i>
	<i>ou</i>	<i>should</i>
	<i>oo</i>	<i>book</i>
	<i>o</i>	<i>wolf</i>
/uw/	<i>u . . . e</i>	<i>rule</i>
	<i>ue</i>	<i>flue</i>
	<i>ui</i>	<i>fruit</i>
	<i>eu</i>	<i>maneuver</i>
	<i>ou</i>	<i>group</i>
	<i>ew</i>	<i>grew</i>
	<i>o . . . e</i>	<i>move</i>
	<i>oe</i>	<i>canoe</i>
	<i>wo</i>	<i>two</i>
/i/	<i>u</i>	<i>just (adv.)</i>
(for those who have this phoneme)	<i>i</i>	<i>children</i>

TABLE IV (Continued)

Phoneme	Grapheme	Examples
/y/	<i>y</i>	<i>you</i>
	<i>i</i>	<i>union</i>
	<i>j</i>	<i>hallelujah</i>
/w/	<i>w</i>	<i>well</i>
	<i>u</i>	<i>quiet</i>
/p/	<i>p</i>	<i>pen</i>
	<i>pp</i>	<i>stopper</i>
/t/	<i>t</i>	<i>ten</i>
	<i>ed</i>	<i>walked</i>
	<i>th</i>	<i>thyme</i>
	<i>tt</i>	<i>bottom</i>
/k/	<i>c</i>	<i>cash</i>
	<i>cc</i>	<i>account</i>
	<i>cch</i>	<i>bacchanal</i>
	<i>ck</i>	<i>back</i>
	<i>ch</i>	<i>character</i>
	<i>cq</i>	<i>acquaint</i>
	<i>cque</i>	<i>sacque</i>
	<i>cu</i>	<i>biscuit</i>
	<i>k</i>	<i>keep</i>
	<i>q</i>	<i>barbeque</i> (now the normal spelling of this word, by actual count)
/b/	<i>b</i>	<i>bed</i>
	<i>bb</i>	<i>robber</i>
/d/	<i>d</i>	<i>den</i>
	<i>dd</i>	<i>ladder</i>
	<i>ed</i>	<i>pulled</i>

TABLE IV (Continued)

Phoneme	Grapheme	Examples
/g/	<i>g</i>	<i>give</i>
	<i>gg</i>	<i>egg</i>
	<i>gh</i>	<i>ghost</i>
	<i>gu</i>	<i>guard</i>
/f/	<i>f</i>	<i>feel</i>
	<i>ff</i>	<i>muffin</i>
	<i>gh</i>	<i>rough</i>
	<i>ph</i>	<i>physics</i>
/θ/	<i>th</i>	<i>thin</i>
/v/	<i>v</i>	<i>visit</i>
	<i>vv</i>	<i>flivver</i>
	<i>f</i>	<i>of</i>
	<i>ph</i>	<i>Stephen</i>
/ð/	<i>th</i>	<i>then</i>
/s/	<i>s</i>	<i>sit</i>
	<i>ss</i>	<i>loss</i>
	<i>sc</i>	<i>scene</i>
	<i>sch</i>	<i>schism</i>
	<i>c</i>	<i>city</i>
/ʃ/	<i>sh</i>	<i>ship</i>
	<i>ce</i>	<i>ocean</i>
	<i>ch</i>	<i>machine</i>
	<i>ci</i>	<i>special</i>
	<i>s</i>	<i>sugar</i>
	<i>sch</i>	<i>schist</i>
	<i>sci</i>	<i>conscience</i>
	<i>se</i>	<i>nauseous</i>
	<i>si</i>	<i>mansion</i>
	<i>ss</i>	<i>tissue</i>

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TABLE IV (Continued)

Phoneme	Grapheme	Examples
	<i>ssi</i>	<i>mission</i>
	<i>ti</i>	<i>mention</i>
/z/	<i>z</i>	<i>zone</i>
	<i>zz</i>	<i>dazzle</i>
	<i>s</i>	<i>has</i>
	<i>ss</i>	<i>scissors</i>
	<i>sc</i>	<i>discern</i>
	<i>x</i>	<i>Xenophon</i>
/ʒ/	<i>g</i>	<i>garage</i>
	<i>s</i>	<i>measure</i>
	<i>si</i>	<i>division</i>
	<i>z</i>	<i>azure</i>
	<i>zi</i>	<i>brazier</i>
/č/	<i>ch</i>	<i>church</i>
	<i>tch</i>	<i>patch</i>
	<i>t</i>	<i>natural</i>
	<i>te</i>	<i>righteous</i>
	<i>ti</i>	<i>question</i>
/ǰ/	<i>j</i>	<i>just</i>
	<i>d</i>	<i>graduate</i>
	<i>dg</i>	<i>judge</i>
	<i>di</i>	<i>soldier</i>
	<i>g</i>	<i>magic</i>
	<i>gg</i>	<i>exaggerate</i>
/m/	<i>m</i>	<i>mile</i>
	<i>mm</i>	<i>hammer</i>
/n/	<i>n</i>	<i>nail</i>
	<i>nn</i>	<i>banner</i>

TABLE IV (Continued)

Phoneme	Grapheme	Examples
/ŋ/	<i>ng</i>	<i>ring</i>
	<i>n</i>	<i>pink</i>
/l/	<i>l</i>	<i>love</i>
	<i>ll</i>	<i>call</i>
/r/	<i>r</i>	<i>red</i>
	<i>rr</i>	<i>carrot</i>
	<i>rh</i>	<i>rhesus</i>
/h/	<i>h</i>	<i>hit</i>
	<i>wh</i>	<i>who</i>

In addition to the single phonemes listed, there are certain combinations of phonemes which have special graphemic representations in English spelling:

/ay/	<i>i . . . e</i>	<i>bite</i>
	<i>i</i>	<i>high</i>
	<i>ai</i>	<i>aisle</i>
	<i>ay</i>	<i>aye</i>
	<i>ei</i>	<i>height</i>
	<i>ie</i>	<i>tie</i>
	<i>ey</i>	<i>eye</i>
	<i>uy</i>	<i>buy</i>
/aw/	<i>y</i>	<i>sky</i>
/oi/	<i>ou</i>	<i>out</i>
	<i>ow</i>	<i>now</i>
/oi/	<i>oi</i>	<i>boil</i>
	<i>oy</i>	<i>toy</i>
/yuw/	<i>u . . . e</i>	<i>use</i>
	<i>eau</i>	<i>beauty</i>

TABLE IV (Continued)

Phoneme	Grapheme	Examples
	<i>eu</i>	<i>feud</i>
	<i>ew</i>	<i>few</i>
	<i>ieu</i>	<i>adieu</i>
	<i>ue</i>	<i>cue</i>
	<i>iew</i>	<i>view</i>
	<i>yu . . . e</i>	<i>yule</i>
	<i>yew</i>	<i>yew</i>
	<i>you</i>	<i>you</i>
/ər/	<i>er</i>	<i>term</i>
	<i>ear</i>	<i>learn</i>
	<i>ir</i>	<i>thirst</i>
	<i>or</i>	<i>worm</i>
	<i>yr</i>	<i>myrtle</i>
	<i>ar</i>	<i>liar</i>
/əl/	<i>ul</i>	<i>cult</i>
	<i>ull</i>	<i>mull</i>
	<i>ol</i>	<i>pistol</i>
	<i>il</i>	<i>pistil</i>
	<i>el</i>	<i>tinsel</i>
	<i>le</i>	<i>handle</i>
	<i>al</i>	<i>sandal</i>
/way/	<i>wi . . . e</i>	<i>wile</i>
	<i>oi</i>	<i>choir</i>
/wə/	<i>o . . . e</i>	<i>one</i>
/hw/	<i>wh</i>	<i>which</i>
/kw/	<i>qu</i>	<i>quick</i>
/ks/	<i>x</i>	<i>mix</i>

they write it as *catalog* and the past tense of the verb as *cataloged*).

In addition to the individual correlations set forth above, there are certain patterns of representation which should be made evident at this point. Before a consonant, especially at the end of a word, as shown in Table V, certain vowel phonemes show parallelism in the way they are written. The first two sets of correspondences show, of course, the values for the vowel letters which, in traditional terminology, are

TABLE V

Parallelism in Graphemic Representation

Phoneme	Grapheme	Examples
/i/ + consonant	<i>i</i> + consonant letter (single or double)	<i>bit</i> ; <i>bitten</i>
/e/ + consonant	<i>e</i> + consonant letter (single or double)	<i>bet</i> ; <i>better</i>
/æ/ + consonant	<i>a</i> + consonant letter (single or double)	<i>bat</i> ; <i>batting</i>
/a/ + consonant	<i>o</i> + consonant letter (single or double)	<i>hot</i> ; <i>hotter</i>
/ə/ + consonant	<i>u</i> + consonant letter (single or double)	<i>nut</i> ; <i>nutty</i>
/iy/ + consonant	<i>e</i> + consonant letter + <i>e</i>	<i>mete</i>
/ey/ + consonant	<i>a</i> + consonant letter + <i>e</i>	<i>bate</i>
/ay/ + consonant	<i>i</i> + consonant letter + <i>e</i>	<i>bite</i>
/ow/ + consonant	<i>o</i> + consonant letter + <i>e</i>	<i>mote</i>
/yuw/ + consonant	<i>u</i> + consonant letter + <i>e</i>	<i>cube</i>
/iy/	<i>ee</i>	<i>beet</i>
/uw/	<i>oo</i>	<i>boot</i>
/iy/	<i>ea</i>	<i>beat</i>
/ow/	<i>oa</i>	<i>boat</i>
/ay/	<i>ie</i>	<i>tie</i>
/yuw/	<i>ue</i>	<i>cue</i>
/ow/	<i>oe</i>	<i>hoe</i>

called "short" and "long." There is a well-known correlation between the use of a single letter plus a following vowel letter (usually, though not always, "mute *e*") to indicate the "long" value of a preceding vowel letter (as in *bate*, *bating*); and the use of a single consonant letter at the end of a word or the use of two consonant letters in the middle of a word to indicate the "short" value of a preceding vowel letter (*bat*, *batting*, *basket*). The other three sets of correspondences shown in Table V exemplify less extensive but very widespread ways of representing the phonemes involved, which show a certain amount of parallelism in the graphemes used.

Our supra-segmental phonemes receive only a partial representation in writing. The period normally represents the "terminal contour" 2-3-1, the sentence-melody that tells us that an utterance is at an end; the comma, the 2-3-2 melody that tells us the speaker is not yet finished. The interrogation mark usually symbolizes, not only the 2-2-3 and 2-2-4 question melodies, but also various others. Colons, semi-colons and exclamation marks may or may not represent intonation contours; a good part of the time, they do not do so, and their use follows arbitrary rules of pseudo-"logic." Stress is not normally symbolized at all, except when emphatic stress on a syllable or a word is marked by italics or capital letters ("You don't *say* so! How TER-ri-ble!"). Open juncture is represented only in compound words and very haphazardly, by means of the hyphen: for instance, the compound /striyt + kàr/ may be written *street car*, *street-car* or *streetcar*. The use of the hyphen in compounds or its absence is, in English orthography, quite capricious, and even different dictionaries give different prescriptions as to its use.

BIBLIOGRAPHY

Soffietti, James P.: "Why Children Fail to Read: a Linguistic Analysis," *Harvard Educational Review* 25.63-84 (1955).
Most of the examples given in Table IV are taken from this source, in somewhat rearranged and expanded form.

REGULARITY AND IRREGULARITY IN ENGLISH GRAPHEMICS

In the material presented in Chapter 4, there is an interesting paradox. English has (according to which analysis we accept) between nine and twelve vowel phonemes, two or three semi-vowels, and twenty-one consonant phonemes—somewhere between thirty-two and thirty-six phonemes in all; but the Roman alphabet has only twenty-six letters that can be used for symbolizing these thirty-two or more phonemes. Yet nevertheless, for almost every phoneme, there is a large number of different ways of symbolizing it. That is to say, although there are not enough graphemes to “go around” in proportion to all the phonemes needing to be symbolized, there is a marked lack of economy—one might well go so far as to say that there is apparently a tremendous confusion—in the choice of graphemic representation for our English phonemes.

Most people, in their thinking about English spelling, get this far and no farther. It is very easy to observe the seeming confusion reigning in our orthography, and to conclude that it is a hopeless mess, out of which no order can ever be brought. From this, it is an easy step to the notion that each English word has its own spelling, and hence that, in effect, the spelling of each English word is like a Chinese character, unrelated in its structure to that of any other word, so far as

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its representation of sound is concerned. A further consequence of this notion is the idea that, in teaching children to read and spell English, we need pay no attention to the graphemic structure of a word's spelling, and that we can include words such as *laugh* or *choir* along with others like *fit* or *crab* from the very beginning.

Widespread though these notions may be, however, they are quite erroneous. Even though our English spelling system may seem capricious, it is by no means wholly so; there is a basic pattern to the way in which it symbolizes the language. Among the various graphemic representations shown in Table IV, some are more consistent and more frequent than others: some spellings, that is, are *regular* and others are *irregular*. This basic fact needs to be more widely recognized than it is at present, and to be taken into account in teaching reading and spelling, if we are to avoid wasting time and energy on both teachers' and students' part.

In Table VI we show what may be considered the regular graphemic representations of English phonemes, as determined by consistency and frequency.

There are, as can be seen from Table VI, only a few instances in which an English phoneme does not have an independent regular representation of its own. The vowels /u/ and /uw/ are both represented most frequently by *oo*; the consonants /θ/ and /ð/ are both exclusively spelled *th*; and for /ž/ (which is relatively rare in any case) it is a toss-up whether its "regular" representation is to be considered as being *z* (as in *azure*), *s* (as in *measure*) or *si* (as in *division*). In general, however, English orthography does afford to each phoneme of the language at least one regular, clear and consistent alphabetic representation.

If anyone doubts this last statement, it is very easy to test it with nonsense syllables (as I have done in the last five

TABLE VI

Regular Graphemic Representations of English Phonemes

Phoneme or Combination of Phonemes	Grapheme	Examples
/i/	<i>i</i>	<i>hit</i>
/e/	<i>e</i>	<i>set</i>
/æ/	<i>a</i>	<i>bat</i>
/a/	<i>o</i>	<i>hot</i>
/ə/	<i>u</i>	<i>but</i>
/iy/	<i>e + consonant letter + e</i>	<i>mete</i>
/ey/	<i>a + consonant letter + e</i>	<i>hate</i>
/ay/	<i>i + consonant letter + e</i>	<i>kite</i>
/ow/	<i>o + consonant letter + e</i>	<i>mote</i>
/yuw/	<i>u + consonant letter + e</i>	<i>cube</i>
/o/	<i>aw</i>	<i>saw</i>
/u/	<i>oo</i>	<i>look</i>
/uw/	<i>oo</i>	<i>boot</i>
/oi/	<i>oi</i>	<i>boil</i>
/ɜr/	<i>ur</i>	<i>hurt</i>
/əl/	<i>ul</i>	<i>cult</i>
/p/	<i>p</i>	<i>lip</i>
/t/	<i>t</i>	<i>tip</i>
/k/	<i>c</i>	<i>can</i>
/b/	<i>b</i>	<i>bib</i>
/d/	<i>d</i>	<i>did</i>
/g/	<i>g</i>	<i>gag</i>
/f/	<i>f</i>	<i>fin</i>
/θ/	<i>th</i>	<i>thin</i>
/v/	<i>v</i>	<i>vim</i>
/ð/	<i>th</i>	<i>this</i>
/s/	<i>s</i>	<i>sop</i>
/ʃ/	<i>sh</i>	<i>shop</i>
/z/	<i>z</i>	<i>zip</i>
/ʒ/	<i>z</i>	<i>azure</i>

TABLE VI (Continued)

Phoneme or Combination of Phonemes	Grapheme	Examples
/č/	<i>ch</i>	<i>church</i>
/ǧ/	<i>j</i>	<i>jam</i>
/m/	<i>m</i>	<i>man</i>
/n/	<i>n</i>	<i>nab</i>
/ŋ/	<i>ng</i>	<i>sing</i>
/l/	<i>l</i>	<i>lab</i>
/r/	<i>r</i>	<i>rot</i>
/w/	<i>w</i>	<i>wen</i>
/y/	<i>y</i>	<i>yet</i>
/h/	<i>h</i>	<i>ham</i>
/hw/	<i>wh</i>	<i>why</i>
/kw/	<i>qu</i>	<i>quick</i>
/ks/	<i>x</i>	<i>box</i>

minutes, with members of my family, before writing this!). Let us try and test the relationship in either direction—both going from pronunciation to spelling, writing down an unfamiliar syllable we hear spoken, or going from spelling to pronunciation, speaking a syllable to correspond to a sequence of letters we have not seen before. If we hear, say, /klæb/, the spelling that comes most immediately and naturally to a writer of English is *clab*; for /gləð/, *glud*; for /sméyt/, *smate*; for /háks/, *hox*. Try it the other way: how would we pronounce, say, *shrump*? Normally, only /šrámp/. Similarly, we would pronounce *thrope* as /θrówp/, *nart* as /nárt/, *zebe* as /zíyb/, and so on.

By no means all of our words are written with these regular or consistent spellings, and there still remains a sizeable residue of words whose spelling is irregular. We must notice two essential points, however. The first is that very few

words are wholly capricious in their spelling: most irregular spellings are irregular only in the representation of one or two of the phonemes contained in the word (usually, though not always, the vowels). Occasionally, some wag will present us with the sequence of letters *ghoti* and ask us how it is pronounced; the answer is /fíʃ/ *fish*, with *gh* = /f/ as in *tough*, *o* = /i/ as in *women*, and *ti* = /ʃ/ as in *nation*. But such a monstrosity is so rare as to be virtually non-existent in normal English spelling; the closest thing to it is *choir*, with *ch* = /k/ (not a unique correspondence, since we have it in *chasm*, *chorus* etc.) and with the really unique spelling of /way/ as *oi*.

The second thing to keep in mind is that even our irregular spellings are by no means wholly random; they fall, to a large extent, into certain sub-sets which are consistent within themselves. Table V in Chapter 4 showed some of these sub-systems, which we might call "regular irregularities," such as *ee* and *ea* for /iy/, *oa* and *oe* for /ow/, etc. Another type of "regular irregularity," this time in the writing of consonants, is the use of double consonant letters at the end of words, and after vowel letters in their "short" values in the middle of words: e.g. *muff*, *till*, *mitt* etc.; *sitting*, *hatter*, *kidded* and so on. With spellings of this type, their phonemic interpretation is still quite clear, and the normal speaker of English will read off *spreat* as /spríyt/, *toak* as /tówk/, or *diff* as /dif/. Going the other way, however, these "regular irregularities" offer alternate ways of writing down what one hears, and it is quite likely that a person who hears such a word as /níyk/ may write it as *neak* or *neek* instead of *neke*, or may write /lǝrt/ as either *lurt*, *lert* or *lirt*. This type of alternate possibility, within the framework of our "regular irregularities," is responsible for a large proportion of the naïve and harmless misspellings we get all the time from so many chil-

dren (and adults!), such as *dert* for *dirt*, *seperate* for *separate*, *speach* for *speech*, *vēsuls* for *vessels*, *botes* for *boats*, or *skool* for *school*. Especially with the spelling of the vowel phoneme /ə/, there is inevitably a great deal of uncertainty in many people's minds, because of the existence of several reasonably frequent alternate spellings—*u*, *o*, and (before *r*) *e*, *a* and *i* as well. How do you spell /twɔrp/ "contemptible little person"—*twirp* or *twerp*?

When we have set up both the "regular" spellings of English phonemes, and the sub-systems of "regular irregularities," there is left a hard core of really irregularly spelled words. (The surprising thing, however, is how few these are in comparison to the great mass of regular and semi-regular spellings.) Under this heading come most of the numerous correspondences we listed under the vowel phonemes in Table IV, and under /k g f s š ž/. For a great many of these irregularities, there are only one or two examples, as in the case of *ay* for /iy/ in *quay*, *u* for /i/ in *busy*, *sch* for /s/ in *schism*, or *wh* for /h/ in *who*. Under this heading come also the "silent letters" like the *b* in *debt* or the *p* in *psychology*. These really irregular spellings do indeed have to be learned as such, but even in the case of *choir* or *quay* their irregular nature is not such that we should treat them as absolutely unique, after the fashion of Chinese characters.

This fundamental division of English spellings into three main types, the regular, the semi-regular and the downright irregular, has a highly important bearing on the way we present English orthography to our children in teaching them to read and to spell. Its far-reaching implications will form the topic of our final chapter.

BIBLIOGRAPHY

- Hall, Frances A., and Eleanor H. Brenes: *Spelling Patterns, Teacher's Edition* (Ithaca, N. Y., Linguistica, 1964).
- Moulton, William G.: "Introduction" to *Teacher's Manual* for Frances A. Hall: *Sounds and Letters* [series of developmental readers] (revised edition, Ithaca, N. Y., Linguistica, 1964).

REGULARITY AND GRADATION IN TEACHING READING AND SPELLING

Pick up almost any one of the reading primers that are currently being used in our schools to start children off in beginning reading, and examine the spelling of the words that are presented to the children at the very outset of their learning. If you do so, the odds are practically the traditional “dollars to doughnuts” that you will find such an assortment as this, which I take from one which I happen to have at hand: (proper names) *Bill, Perky, Susan, Fuzzy*; (common nouns and words of other types) *stop, come, good, to, look, at, go, here, mother, baby, me, help, and, play, with, see, thank, you, sleep, away, daddy*. Now examine these twenty-five items from the point of view of their regularity of correspondence between grapheme and phoneme, as we have been analyzing it in the preceding chapters. There are nine words whose spelling is quite regular (*stop, good, look, at, here, help, and, with, thank*); the other sixteen are irregular, showing either the kind of “regular irregularity” which we discussed in Chapter 5 (*Bill, Susan, Perky, Fuzzy, baby, play, sleep, away, daddy*) or non-systematic irregularity (*come, go, to, mother, me, see, you*). This particular book is, for that matter, not the worst of the lot; I have seen some in which, at the very beginning, such wildly irregular spellings as *laughed, work, busy, and ball* were introduced, and in

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which only two or three words with regular spelling were present, in proportion to a score or more of "irregulars."

What is wrong with such a situation? The answer is obvious: any book or set of books which starts the beginner off with so many irregularly spelled words, and in which the proportion of "irregulars" gets (if anything) worse in the later stages, has been constructed with total disregard of gradation in the difficulty of the spellings introduced. The result is equally obvious: the children who are supposed to learn to read from such books are confused from the start. They never get the idea that there is any regularity, any fundamental principle whatsoever in English spelling. For a child taught to read out of such a book, all English spelling remains permanently chaotic; every word is for him a separate item whose spelling he must learn in and for itself, just as a Chinese child has to learn the strokes of the brush with which each individual character is written. If he does learn the true facts of the situation, if he does catch on to the alphabetic nature of our orthography, if he does eventually establish for himself the relation between graphemes and phonemes, and thereby learns to read with reasonable speed and effectiveness, it is, not because of, but in spite of the way he has been taught to read. Most Americans now living who are under the age of around thirty-five have been taught to read by the currently prevailing "global recognition," "see-and-say" method; and the great majority of them are mediocre or poor readers, because, and only because, they have been taught this way.

The various series of beginning readers now in use that embody the "see-and-say" method have been built in accordance with certain specific theories of the educationalists which go directly contrary to what is known about language and its relation to writing. The fundamental error of the

"reading experts" has been that they have neglected the alphabetic nature of our spelling system. They have either been indifferent to, or (in some extreme cases) actually denied, the fact that graphemes represent phonemes. They have espoused the opposite (and, as we saw in Chapter 2, quite erroneous) notion, that written words stood directly for "ideas," for real-life meanings; and that it was therefore possible and desirable to build up in children a direct correlation between written words and their real-life meanings, without going through the stage of tying up the spelling of a word with its pronunciation.

A further confusion has arisen because the "reading experts" have not known the basis on which skill in reading is built up, and have confused the ability of adults and children in this respect. The ultimate aim of a child's learning to read is of course that he should be able to read both fast and accurately, and should understand the real-life meaning of what he has read. The educationists have thought, however, that because an adult reads rapidly and "silently," a child can do the same thing, and should be taught to do so from the start. Such a notion neglects the basic fact that even the most skillful adult never reads in true silence, since there is (as we mentioned earlier) always an act of "inner speech" which goes on as a person reads, and which is inhibited on the muscular level. Rapid reading consists essentially of a sampling process, in which the reader looks at what he knows are going to be the key words or phrases in the passage, and supplies the remainder of what must go before or come after, by extrapolating from the context; but in order to do this, the reader must already have a reasonably extensive knowledge of the world in general and of the topic he is reading about.

Since they do not know or choose to recognize the central

problem that they are trying to deal with, the "reading experts" have let themselves be sidetracked into all kinds of notions and theories which are at best irrelevant and at worst extremely harmful. Studies of children's perceptions of the different shapes of letters; of rapidity of eye-movements; of the frequency of words in the conversation of six-year-olds; of the optimum proportion between pictures and printed text on the pages of beginning readers—these are only a few of the irrelevancies that have been investigated. Some of these studies have been very thorough, very careful . . . and totally useless so far as any bearing on the fundamental problem of correlating letters with sounds is concerned. As one observer put it, "the 'reading experts' have marvellous peripheral vision, and a large blind spot at the very center."

If the "reading experts'" only divagations were in the direction of investigating similar irrelevancies, not so much harm would be done. Often enough, however, their ignorance of the facts of language and writing leads them to do very great damage. Children's intelligent and logical misspellings, like *munny* for "money" on the analogy of *funny*, call down fierce condemnations from the "reading experts," and a child who mis-spells in this way will be told he is a "bad speller" and a "problem child." (The proper way to handle such a situation would be to praise the child for using his common sense on the matter and then to point out to him that, unfortunately, our spelling system doesn't work as intelligently as all that, so that he will have to learn a special way of writing that word, namely *money*.) Another child, who has fully mastered the alphabetic principle, and can pronounce any combination of letters that he sees (e.g. *shrump* or *blip* or *meem*) without necessarily knowing their real-life meaning (if any), draws only sneers from the self-

styled “experts,” who dub him a “word-caller.” In actual fact, such a “word-caller” has mastered the principles of English orthography far better than an incompetent “reading expert” who does not know the relation between sounds and letters, and who therefore tries to destroy the pupil’s knowledge and self-confidence—a true case of the blind insisting on leading those who can see, and doing their best to ruin the latter’s sight in the process. And what are we to think of the educationalist who decides (as one did recently) to take a whole class of first-graders and try to teach them to read “silently” from the start, actually forbidding (yes, forbidding!) them to pronounce anything at all in connection with the letters they saw in printed words?

An even worse effect of the educationists’ neglect of the basic facts of language in the teaching of reading is the destruction of analogical reasoning ability in the young learner. We all extend by analogy what we have learned by memorization; if we did not do this, our learning would be ineffective. An ability to analogize is essential for any process of analysis or thinking. Now when a child writes, say, /móniy/ as *munny*, by analogy with the spelling *funny* for /fóniy/, or if he writes /réyn/ as *rane* by analogy with *sane*, *Jane* etc., he is not being stupid; on the contrary, he is using his intelligence to extend the patterns of spelling that he has already learned. If we scold him enough times for writing *munny*, *rane* and the likes, he will learn that, in this situation, intelligent thought and analogical formation repay him less than does blind memorization (no matter how ineffective) and he will cease using his intelligence. However, the ability to see parallelisms and to draw analogies is of paramount importance both in everyday living and in creative thinking. Reading and spelling is the first context in which he has an opportunity to learn the applications (and limitations) of

analogical reasoning in his intellectual life. If he is denied this opportunity; if he is taught to neglect regularities in the correspondence of letters to sounds, by educationists who are themselves ignorant of the elementary facts in this matter; if he is scolded and down-graded for applying the principles of elementary analogical reasoning in his spelling—if he is discouraged in these respects, his most valuable asset in the process of thinking is being devalued and destroyed.

The true aim of a beginning text in reading is, indeed, to teach the learner the *meaning* of what he sees printed or written. But, as we have seen, the sequence of graphemes which constitutes a written word has only one kind of meaning, a *linguistic* meaning, the phonemes which constitute the word itself in speech. As to the “real-life” meaning of the word, no-one is denying its existence, far from it; but we are insisting that “real-life” meaning, a thing which is correlated directly with spoken words, is on a very different plane of linguistic activity and has to be learned through real-life experience. To teach a child to read, we must help him to make correlations between graphemes and phonemes, so as to reproduce (with his organs of speech or in his brain) the sounds represented by what he sees written. If we want him to read rapidly, he must first learn to read slowly and then to speed up on the basis of a knowledge of what is to be expected in any given context.

A properly planned series of developmental reading texts will, therefore, be based on the principle of graded selection of words, in terms of their difficulty, in accordance with the fundamental principle of passing from the less difficult to the more difficult. But the term *difficulty* here means, obviously, irregularity of correspondence between grapheme and phoneme. The very first books of such a series will have as few

irregularly spelled words as possible—only as many as are necessary to hold the continuity of the text and to key its parts together. The intermediate books will present the irregular spellings that run in groups, and the advanced books of the series will introduce the real irregularities. Under such a procedure, *can*, *bit*, *fox* and so on would come at the outset; *tail*, *gate*, *seem* etc., at the intermediate level; and *fight*, *wrong* or *work* would be presented towards the end. No pictures; all that a picture does is to encourage a child to guess, not on the basis of the letters he sees printed, but from what he sees in the picture or drawing, so that, if asked to read off *ship*, he is likely to come out with “boat” or the likes. The entire structure of English graphemics can easily be presented in ten elementary readers, which can be covered in not over two years (first and second grade), after which a pupil of ordinary intelligence can start reading in the third grade what is normally read in the fifth.

The same considerations apply to the teaching of punctuation, at only a slightly later stage. At present, the ordinary fourth- or fifth-grader cannot make head or tail of the instructions he is given for punctuating a sentence, because they are formulated in terms of meaning. For instance, in a sentence like this: *There goes the postman to whom I gave the letter*, he is told to put a comma after *postman* “in case the dependent clause is non-restrictive or appositional,” and to put no comma “if the dependent clause is restrictive.” Such a formulation involves a complicated definition of “restrictive” and “non-restrictive” which only leads to further confusion. This traditional approach neglects the fact that most, although not all, of our English punctuation reflects intonation patterns. Punctuation can be taught much more quickly, easily and effectively if the teacher knows how to analyze intonation, how to make its patterns clear to the

pupils, and how to point out to them the ways in which intonation is reflected in punctuation. In the example given above, all speakers of English will put a comma after *postman* if they speak the sentence with a 2-3-2 intonation and a slight pause at that point; and this intonation and pause TELL the hearer that the following material does not serve to identify the postman, but simply to add extra ("non-restrictive") information concerning him. On the other hand, if this sentence is spoken with no break in intonation and no pause after *postman* we write no comma; in this case, the absence of break or pause in intonation TELLS us that the following material is essential to the identification of the postman ("is restrictive").

Similarly, if we know something about juncture and syllable-structure in English, we can teach the syllabification of English words in spelling much more effectively. In this connection, we especially need to recognize that the hyphenations and syllable-divisions set forth in our dictionaries is very largely arbitrary, and that they therefore do not, in fact cannot have, by the very nature of the situation, any absolute validity. For /stríyt + kàr/, one "authority" may prescribe the spelling *street-car*, another *streetcar* and still another *street car*; but no one of the three can lay any claim to accuracy in his prescription, because our actual usage is so varied. (I personally prefer to write all such compounds with a hyphen, e.g. *man-hole*, *hard-top* etc.; but very few writers of English are willing even to attempt complete consistency in this matter.) In the case of a single consonant between vowels, we have already seen in Chapter 2 that such a sound belongs to both the preceding and the following syllable; hence the language itself affords us no clue as to where a word like *water* should be broken, and it is equally justifiable to syllabify it as *wa-ter* or *wat-er*.

"But we want our pupils to read for *meaning*, not just to become mere word-callers!", the ordinary educationist wails at this point. As a matter of fact, the amount of real-life meaning that any child learns out of an ordinary "see-and-say" text is incredibly small; how much "meaning" of any kind is he going to get out of endless repetitions of inanities like "Spot! Jane! Look! Oh, Spot! Oh, Jane! Oh, look! Oh, Spot, Jane, look! Oh, oh, Spot, Spot, Jane, Jane, look, look! Oh, oh, oh, look, Spot, look, Jane, oh, Jane, oh, look, Spot, look, oh . . . !"? In imbecilities like this, endless repetition is used to try to hammer the spellings home, instead of attempting to develop in the learner a more reasonable correlation between sounds and letters that would render such repetition unnecessary, and enable him to learn the spellings of many more words much faster. And who is the first to complain when a text introduces a regularly spelled word which is infrequent in first-graders' conversation, such as *brooch* or *scrod*? The "reading experts," because they complain that such words are "foreign to the child's experience"! But what is the whole purpose of any-one's reading, as a child or as an adult, if not to introduce him to new concepts and new ideas which he would not meet in his ordinary everyday life?

The "global recognition" or "see-and-say" method of teaching reading seems to have gained its hold on the teaching profession in the 1930's because of a desire on the educationists' part to have children learn to read at greater speed. The "reading experts" decided that there was no use in helping the pupil to correlate sounds and letters, because they thought that English orthography was hopelessly chaotic; and they thought that, because adults take in the spelling of a whole word at a glance, a child can be taught to do the same thing without ever going through any intermediate

steps. (In teaching people to read music, how many teachers of voice or instruments insist that the learners refrain religiously from analyzing the staff, the clefs, the bar lines or the different kinds of printed notes? How many chemists insist that their beginning students must never be allowed to get the idea that in a formula like, say, H_2SO_4 , the symbol H refers to hydrogen, S to sulphur and O to oxygen?) By the time, twenty-five years later, when any substantial segment of the general public began to wake up to the facts of the situation and to realize the harm that had been done, the "reading experts" had a stranglehold on the teachers' colleges and the educational profession, and, even worse, many millions of dollars had been invested in textbook series constructed according to the "see-and-say" method.

When the public began to realize the situation, there was indeed a loud outcry and what looked like the beginnings of a revolution. In 1955, the publication of Rudolf Flesch's provocative book *Why Johnny Can't Read* sparked a storm of protest against the prevailing unscientific way of teaching reading; but in a few years the outcry died down, and Flesch's book had little permanent effect. This was largely because professional educationists and publishers, with great sums of money invested in existing series of readers, conducted a tremendous anti-Flesch campaign to convince the public that his attacks on current teaching methods were unfounded. In doing so, Flesch's opponents dragged in such irrelevancies as the question whether the "Johnny" of Flesch's book was a real or a fictional child, and insinuated that to question the efficiency of our teaching of reading was to cast doubt on the validity of democratic education. On the specific matter of teaching techniques, they countered his basically sound arguments with unsound ones, such as the notion (which we have already seen to be fallacious)

that written words are perceived as units by adult readers and should therefore be taught as such to child learners. Unfortunately, the general public did not have enough linguistic knowledge to detect the unsoundness of such arguments, and Flesch, although his negative criticisms were quite valid, had not supplied his readers with enough linguistic theory to evaluate his opponent's replies. Consequently the Flesch revolt fizzled out and proved to be a kind of Wat Tyler's rebellion, in which an embattled group with a very just grievance and with right on their side were defeated by forces that had both greater material power and more tactical skill. The entrenched strength of "reading experts" and educationists was, during the following decade and more, often strong enough to block the adoption of sound approaches to teaching reading, even where (as in New York City) these latter had enabled first-grade students in primarily Negro or Puerto Rican schools to read better than second-grade students elsewhere.

If reading is taught effectively and thoroughly in the first and second grades, remedial reading at a more advanced level should become a much less urgent problem than it is at present, and so should spelling. A widely accepted estimate states that in our schools one out of every ten children has a reading problem and one out of every three has one in spelling. There is no reason in the world why so many children should have such problems, if they were taught more effectively at the outset. The strange thing about the situation is that, for remedial reading, the educationists are willing to accept as a last resort the very techniques that should have been used from the start, namely an attempt to set up correlations in the student's mind between graphemes and phonemes. When such a correlation is set up, it usually—unless too strong a blocking against reading has developed—

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helps the student to get over his difficulties. But why should a really effective approach be put off until it has to be brought in as a desperate, last-minute remedy, when its use from the beginning would have saved nine-tenths of the trouble?

In spelling, too, a rational approach could save a tremendous amount of wasted effort and psychological harm. Our spellers could be organized on the same type of basis as our ideal elementary readers, presenting the words in groups that show similar features of spelling. We shall also have to learn to distinguish between harmless and harmful mis-spellings. "But aren't all mis-spellings equally bad?", the reader may ask. By no means. If a person writes *cote* for "coat," *cloke* for "cloak," *smoak* for "smoke," *appendicitus* for "appendicitis" or *soljer* for "soldier," no damage is done to intelligibility, and the reader can tell perfectly well what is meant. (As a matter of fact, *cloke* and *smoak* and a number of similar spellings were perfectly common in the eighteenth century, and no-one was harmed by the existence of alternate spellings like *cloak* and *cloke*.) On the other hand, a mis-spelling like *bology* for "biology" or *curse* for "cruise" is far more harmful, because it signals to the reader that he is to pronounce something different from what belongs in the context. Of course, our final aim is to get our pupils to have a full command of all the peculiarities of English spelling; but we must recognize that there are different degrees of "wrongness" in mis-spellings, and that not all errors are to be condemned or marked down with equal severity.

The irregularities of English spelling originated between four and five hundred years ago, at a time when English society was organized according to strict class distinctions, and when the upper classes—nobles and intellectuals—

wanted to keep the art of reading and writing as their private possession. An irregular, irrational spelling system was an excellent means to that end, and to maintaining class distinctions; it is, as the economist and sociologist Thorstein Veblen pointed out over sixty years ago, "archaic, cumbrous and ineffective; its acquisition consumes much time and effort; failure to acquire it is easy of detection. Therefore it is the first and readiest test of reputability in learning, and conformity to its ritual is indispensable to a blameless scholastic life." Yet we cannot abolish it and replace it by a more regular, phonemically based orthography at this time, for several reasons: such a drastic change would involve too great a readjustment in our culture's habits; it would involve an impossibly great expense in reprinting even the most essential books; and a tremendous number of intellectually valuable but financially unprofitable writings would go unprinted and would speedily be lost to all but the antiquarians. And yet we must teach our children, all of them, to read by the orthographical system we have inherited. We are saddled, therefore, with this paradoxical task: we must preserve an orthography which was deliberately loaded with difficulties in order to make it accessible only to a chosen few; but we must teach it to all the members of a democratic society.

At the present juncture in the world's history, we absolutely cannot afford, for obvious reasons, to fail in this task. The "global" or "see-and-say" method of teaching reading has been tried out on a whole generation, and has ended in abject failure. As we have seen in this discussion, the only way to teach reading and spelling effectively is to do so on the basis of linguistic facts and to establish in the learner's mind a correlation between graphemes and phonemes—to put it more simply, between letters and sounds. The knowl-

edge that linguistic analysis has gained can be applied to the construction of texts so as to teach our children to read with real effectiveness. Nothing—not even the prestige of “reading experts” or the publishers’ invested millions—should be allowed to interfere with the attainment of this goal.

BIBLIOGRAPHY

- Albright, Robert W.: “Four Steps to Reading,” *North Dakota Teacher*, October, 1956.
- Albright, Robert W.: “A Linguistic Approach to Reading and Spelling,” *North Dakota Teacher*, January, 1957.
- Flesch, Rudolf: *Why Johnny Can't Read—And What You Can Do About It* (New York, Harper's, 1955; reprinted New York, Popular Books, 1956). Reviewed by Robert A. Hall, Jr., in *Language* 32.310–313 (1956).
- Hall, Frances Adkins: *Sounds and Letters*. [Series of developmental readers.] (Revised edition, Ithaca, N. Y., Linguistica, 1964.)
- Hall, Robert A., Jr.: “Thorstein Veblen and Linguistic Theory,” *American Speech* 35.124–130 (1960).
- Mayer, Milton: “Close to Midnight for the New York Schools,” *New York Times Magazine*, May 2, 1963, pp. 34–35, 104, 106–107, especially 35–104.

SOUND AND SPEECH IN ENGLISH

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In recent years, there has been extensive discussion of the teaching of reading in our American schools. . . . Without an understanding of the relation between writing and speech, in general and as applied to English, we can never solve the problem of teaching our children to read accurately and effectively. . . .

It may take a drastic wrench in our habitual thinking to conceive of speech as taking precedence over writing in human affairs, but we must do so if we are to understand the actual relation between the two. Writing is simply a way of representing speech, and our conventional systems of orthography are always incomplete and inaccurate in their representation of language as it is spoken. That this is so, can be shown on every count: historical origin, everyday function, and present-day importance. . . .

The practical conclusion to be drawn from these considerations is that letters represent sounds, not the other way around, and we must base all our thinking on this fundamental fact.

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